

POLYPHONIC ANALOGUE SYNTHESIZER minilogue SERVICE MANUAL

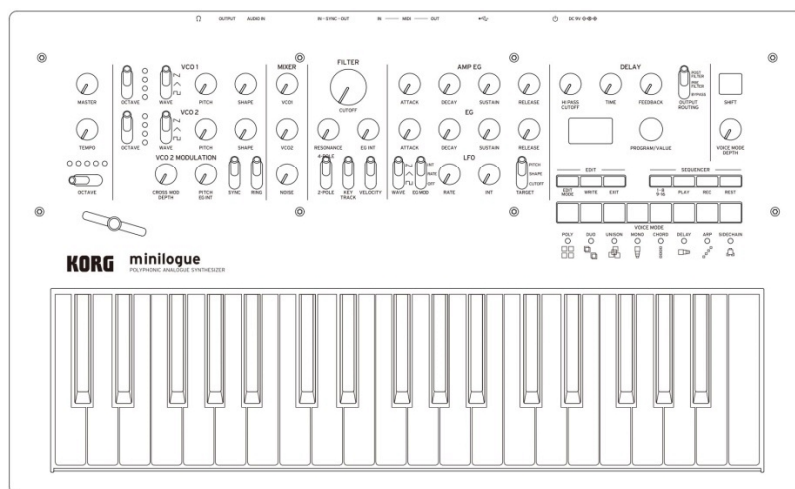


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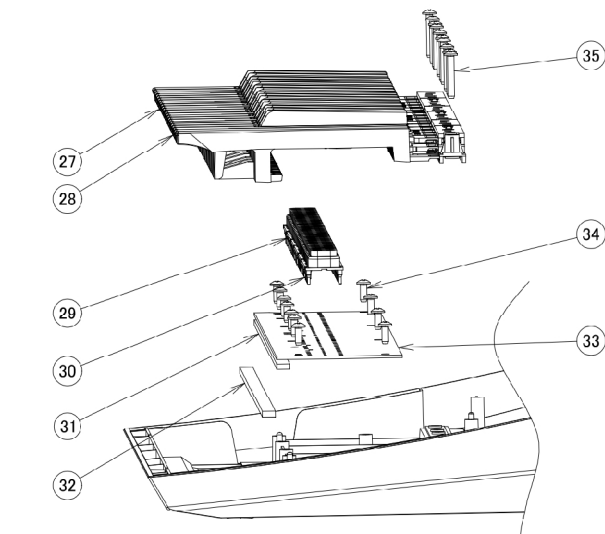
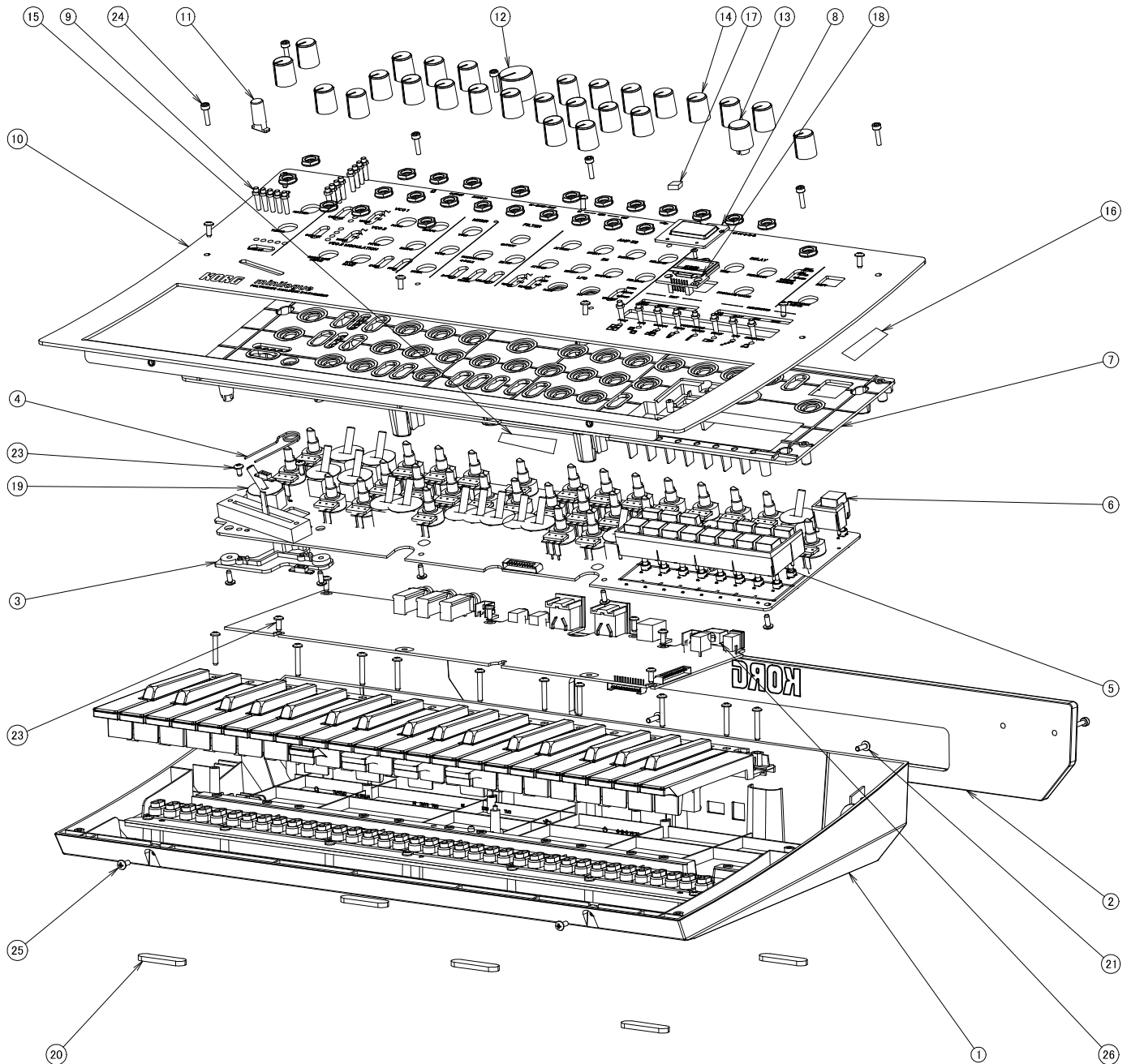
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KORG

Issued: Jan. 8, 2016

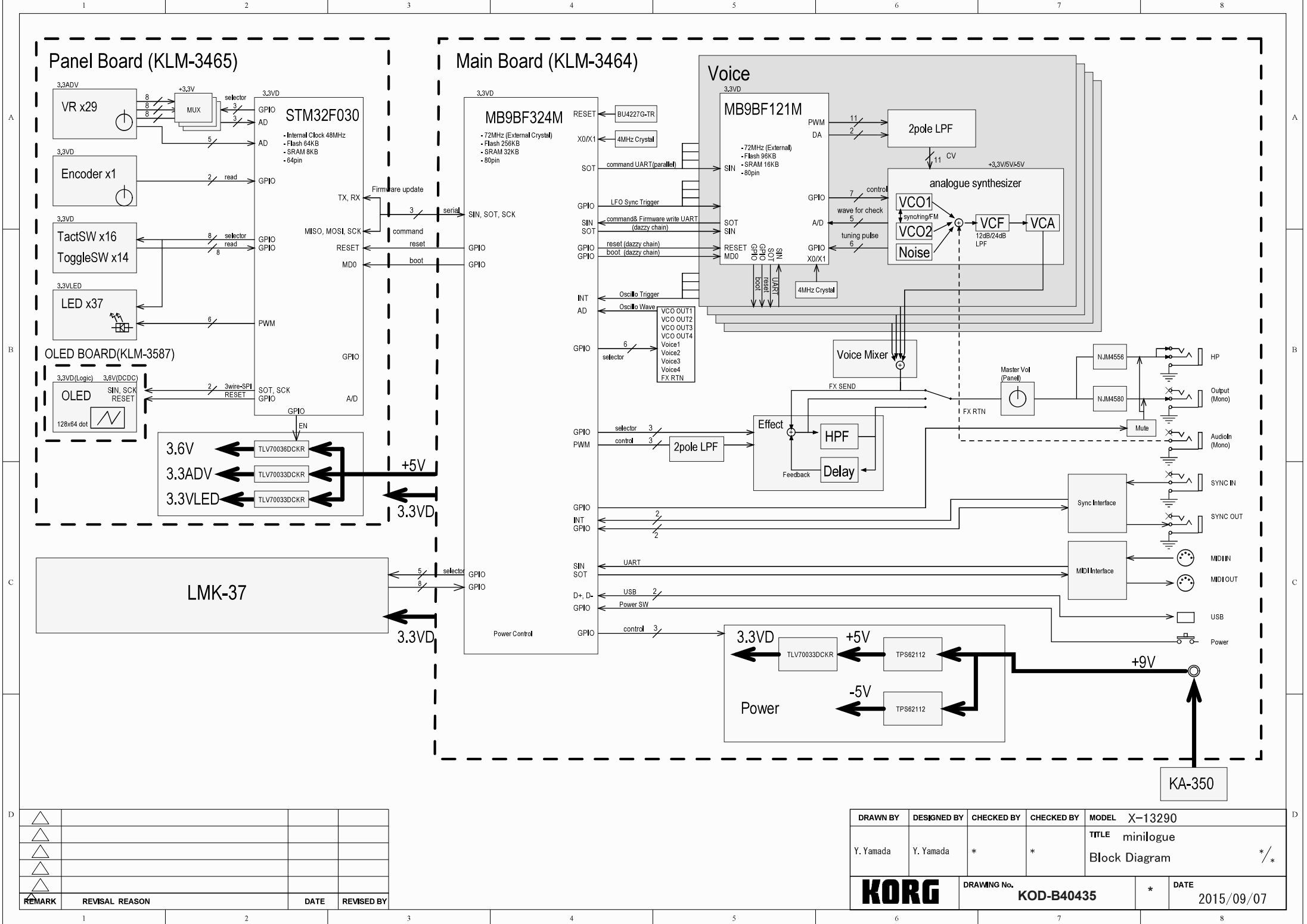
Ver. 1.0

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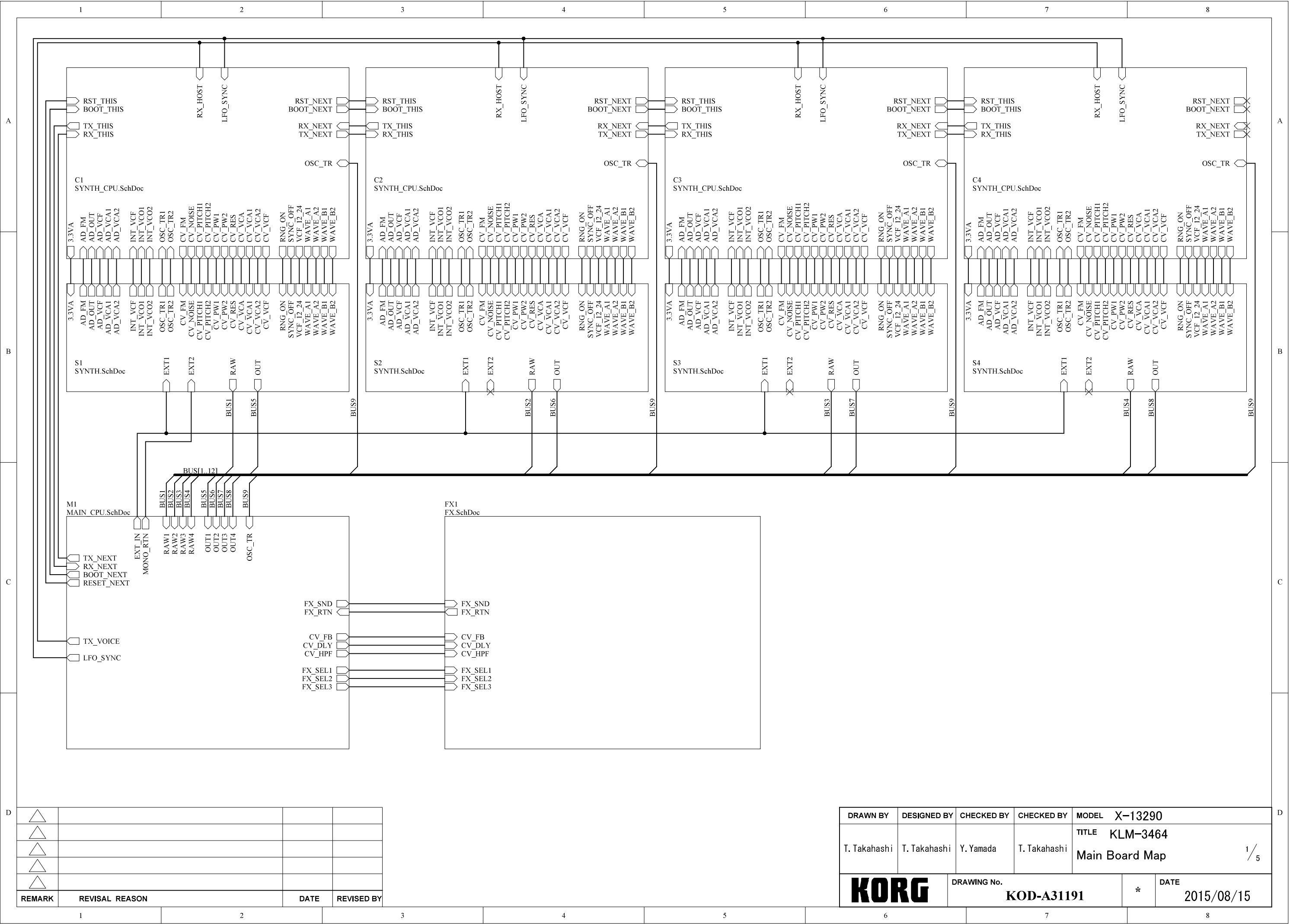
27	LMK SYNTH 12KEY ASSYN KOC-H30424-1
28	LMK SYNTH 13KEY ASSYN KOC-H30424-2
29	LMK RUBBER BUTTON 12 KOC-E30630-2
30	LMK RUBBER BUTTON 13 KOC-E30630-1
31	LMK-37 UPPER LIMIT FELT (S) KOC-F41793-2
32	LMK-37 KB FELT KOC-F41792
33	KEYBOARD UNIT LMK-37 KLM-3176
34	BT B 3BC 3X8
35	BT B 3BBC 3X20

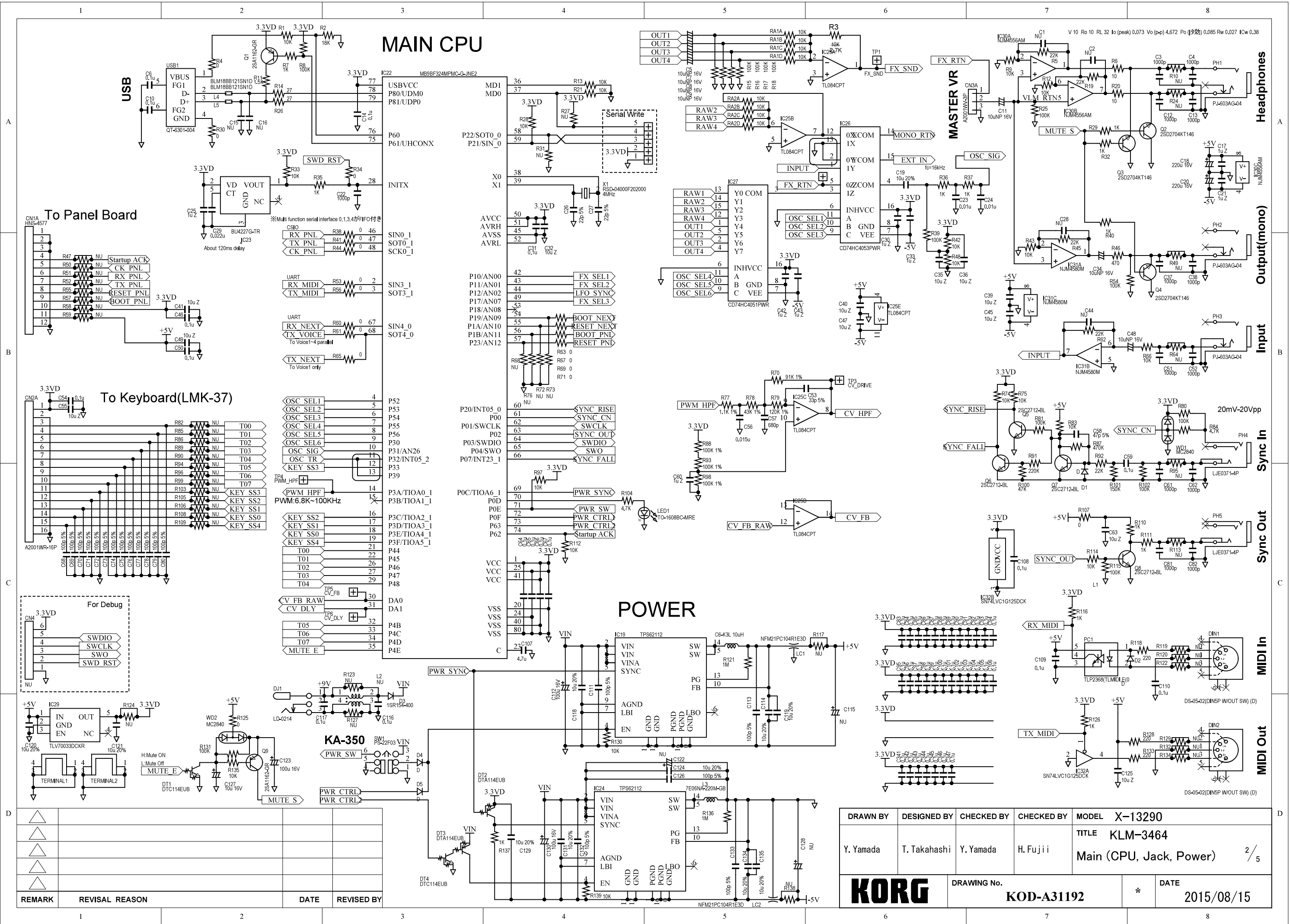
1	X-13290 lower case E10286
2	X-13290 Back board D30408
3	X-13290 Bend Bracket E30756
4	X-13290 Bend Spring C41846
5	X-13290 Button unit E20342
6	X-13290 Button single E30728
7	X-13290 Mold Chassis E20432
8	X-13290 Window E30768
9	X-13290 Led refractor E40933
10	X-13290 Upper Panel C10291
11	X-13290 Bend knob E30749
12	X-13290 Filter knob E30732
13	X-13290 Tempo knob E30731
14	X-13290 Vol knob E30730
15	X-13290 shield sheet mid F42062
16	X-13290 shield sheet rear F42063
17	X-13290 SHIELD FORM 6X6X6
18	X-10210 OLED CUSHION F41721
19	X-5500 SWITCH MASK KOC-F41307
20	FRAME LEGS F41516
21	SCREW FE B NIC 3X12
22	SCREW BT B 3BC 3X8 KUMAGAYA
23	BT B 3BBC 3X6
24	X-3230 CAP SCREW KOC-C41316
25	FE B 3BBC 3X8
26	X-6140 PSW KNOB KOC-E40774



△			
△			
△			
△			
△			
REMARK	REVISAL REASON	DATE	REVISED BY

DRAWN BY	DESIGNED BY	CHECKED BY	CHECKED BY	MODEL	X-13290
Y. Yamada	Y. Yamada	*	*	TITLE	minilogue Block Diagram
KORG		DRAWING No.	KOD-B40435	*	DATE 2015/09/07

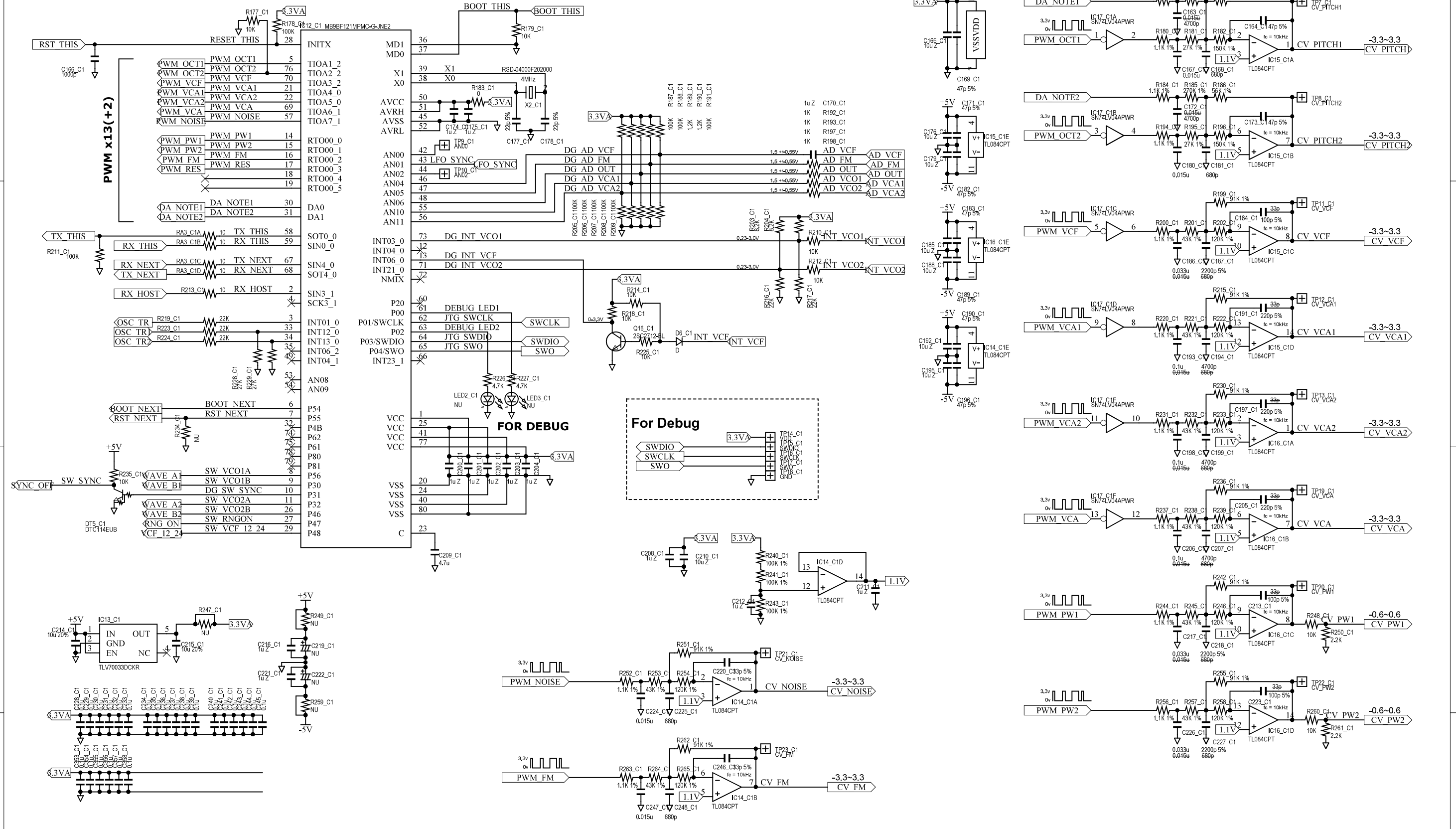




DRAWN BY	DESIGNED BY	CHECKED BY	CHECKED BY	MODEL	X-13290
Y. Yamada	T. Takahashi	Y. Yamada	H. Fujii	TITLE	KLM-3464
Main (CPU, Jack, Power)					2/5
DRAWING No.		DATE			
KORG		KOD-A31192		2015/08/15	

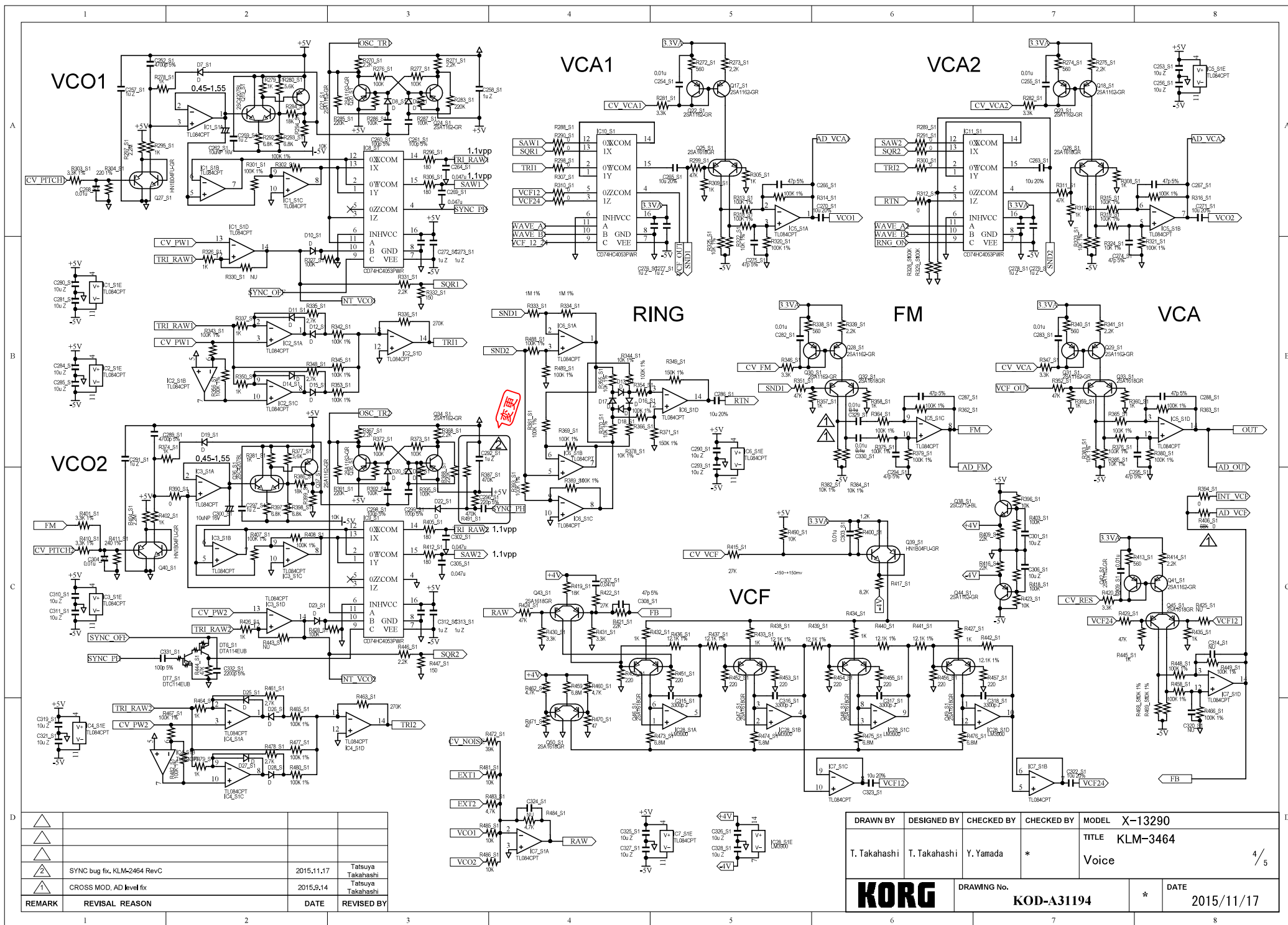
VOICE CPU

PWM FILTERS



5	added capacitor	2015.1.23	Yoshihito Yamada
4	added resistor divider to PW CV	2015.1.13	Yoshihito Yamada
3	changed footprint	2014.12.25	Yoshihito Yamada
2	added current sense resistors to power	2014.12.25	Tatsuya Takahashi
1	changed 3.3VA from power net to port	2014.12.25	Tatsuya Takahashi
REMARK	REVISAL REASON	DATE	REVISED BY

DRAWN BY	DESIGNED BY	CHECKED BY	CHECKED BY	MODEL	X-13290
T. Takahashi	T. Takahashi	Y. Yamada	H. Fujii	TITLE	KLM-3464
					Voice CPU
KORG				DRAWING No.	KOD-A31193
				*	DATE
					2015/08/15

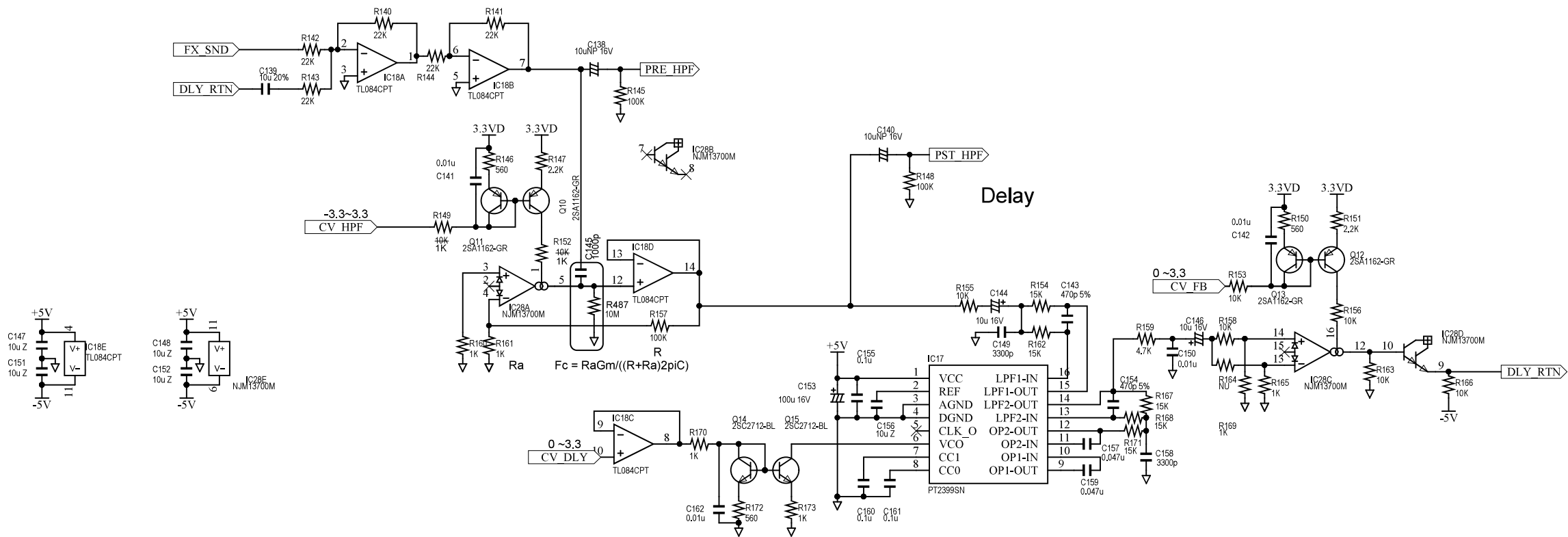


A

B

C

D



△			
△			
△			
△			
△	corrected package size to 1608	2014.12.24	Tatsuya Takahashi
REMARK	REVISAL REASON	DATE	REVISED BY

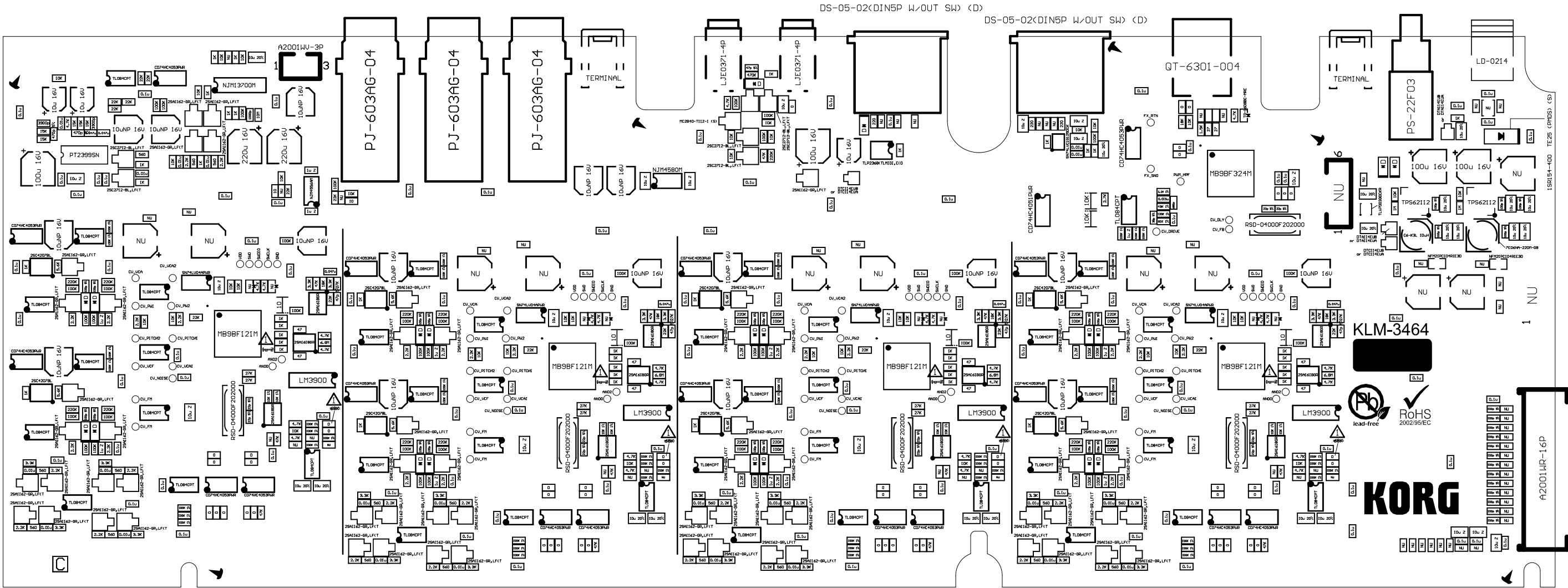
DRAWN BY	DESIGNED BY	CHECKED BY	CHECKED BY	MODEL	X-13290
T. Takahashi	T. Takahashi	Y. Yamada	*	TITLE	KLM-3464
				Effects	5/5
KORG		DRAWING No.		*	DATE
		KOD-A31195			2015/08/15

A

B

C

D



注意事項

- * ジャック、コネクタはSMT後に手半田して下さい。
- * ジャックは浮き・傾きが無いよう注意して下さい。

notes

- * hand solder connectors after reflow
- * ensure lead components are fully inserted

△	SYNC bug fix. rev.C	2015.11.17		T. Takahashi
△	CROSS MOD, AD level fix	2015.9.14		T. Takahashi
MARK	REVISAL REASON	DATE	REVISED	APPROVED

D: 1SS355 T/R
Z: -20 +80%

DESIGNED	DRAWN	CHECKED	APPROVED	MODEL X-13290
Yoshihito Yamada	Ally Japan	Tatsuya Takahashi	Tatsuya Takahashi	TITLE KLM-3464 TOP MOUNT DIAGRAM
KORG		DRAWING No. KOD-F 31087	DATE 2015.7.13	△ BC

変更

To Main Board

PANEL CPU

POWER

LED MATRIX

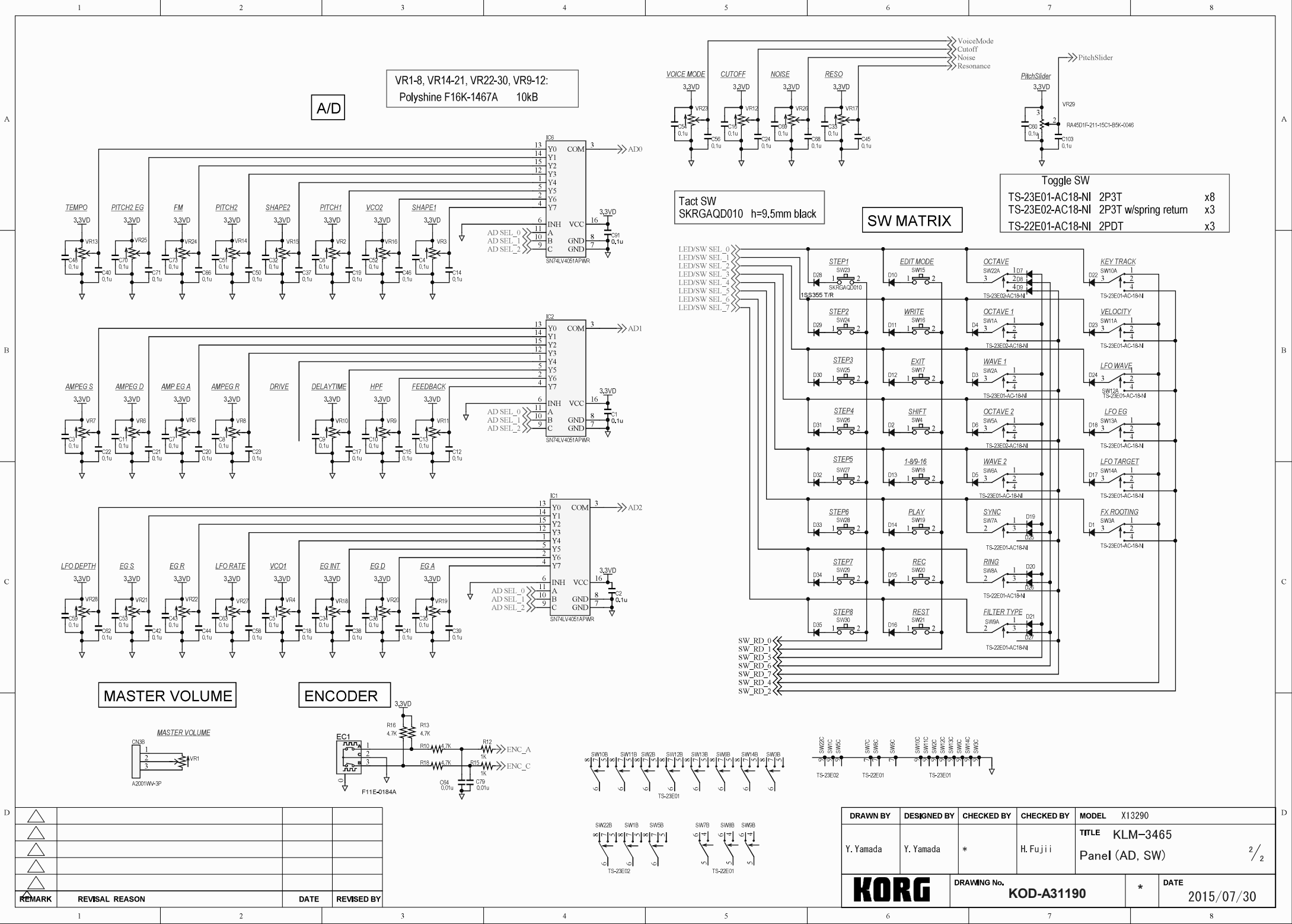
OLED MODULE

3-wire SPI

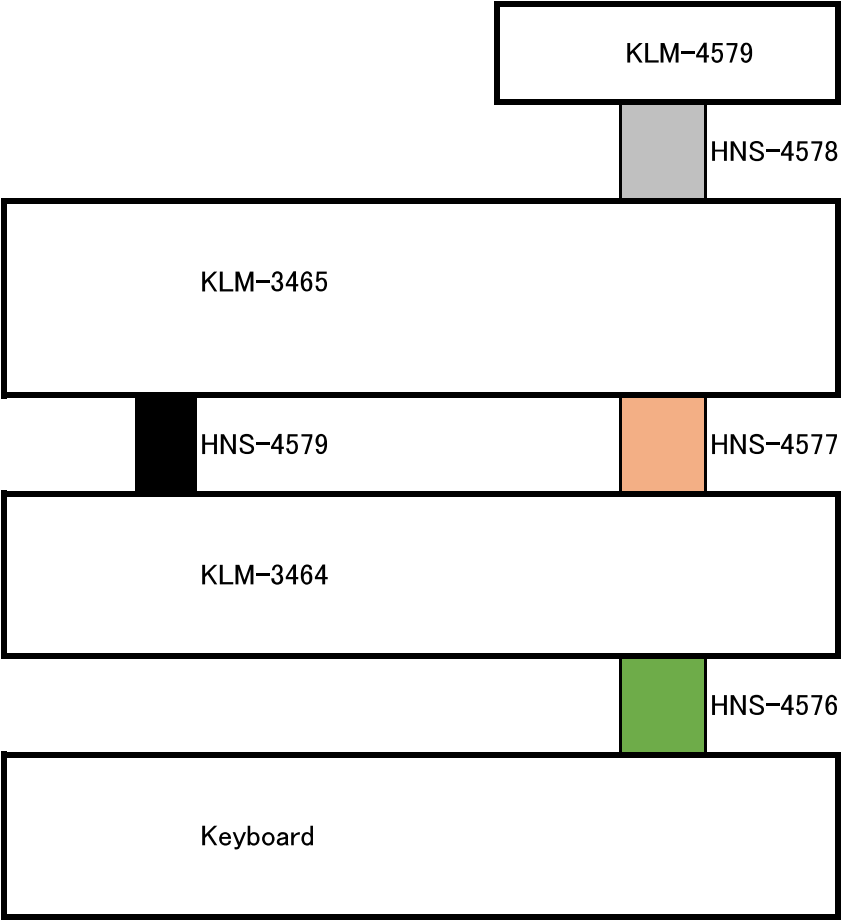
BS0:1
BS1:0
BS2:0

For Debug (SWD)

DRAWN BY	DESIGNED BY	CHECKED BY	CHECKED BY	MODEL	X-13290
Y. Yamada	Y. Yamada	*	H. Fujii	TITLE	KLM-3465
Panel (CPU, OLED, LED)					1/2
KORG		DRAWING No. KOD-A31189		*	DATE 2015/07/30



minilogue HARNESS DIAGRAM



How to check the operation of minilogue

2015/12/08

KORG, Inc

1. Please turn on the power of minilogue, and the logo of minilogue will appear in display module. 13 or 14 seconds after turning on the power, the logo will disappear.

If display is not working, please check the connection of harness (HNS-4577 and HNS-4578). Otherwise the module of OLED may be broken.

If the logo of minilogue does not disappear in 15 seconds, it means analogue circuit have a problem and cannot finish tuning operation. You have to repair KLM-3464 PCB. (→please check page.2)

2. Please check the sound using speaker or headphone. You can change the volume by “MASTER” knob.

If you cannot hear the sound at all, please check the connection of main volume harness (HNS-4579). Otherwise Keyboards may have trouble. If you cannot confirm midi message from USB-MIDI or MIDI OUT Port, please check the connection of keyboard harness (HNS-4576)

Minilogue makes sounds from voice 1, voice 2, voice 3 voice 4, and voice 1... in order. So if something is wrong with 3rd voice after turning on the power, it means voice 3 have trouble in KLM-3464 PCB, for example.

3. Please check the reaction of all knobs and switches. By choosing ‘**Global 5>Parameter Disp All**’ in EDIT MODE, you can see all the reaction of operation in display module.

If there is nonreactive knob or switch, you have to check KLM-3465 PCB.

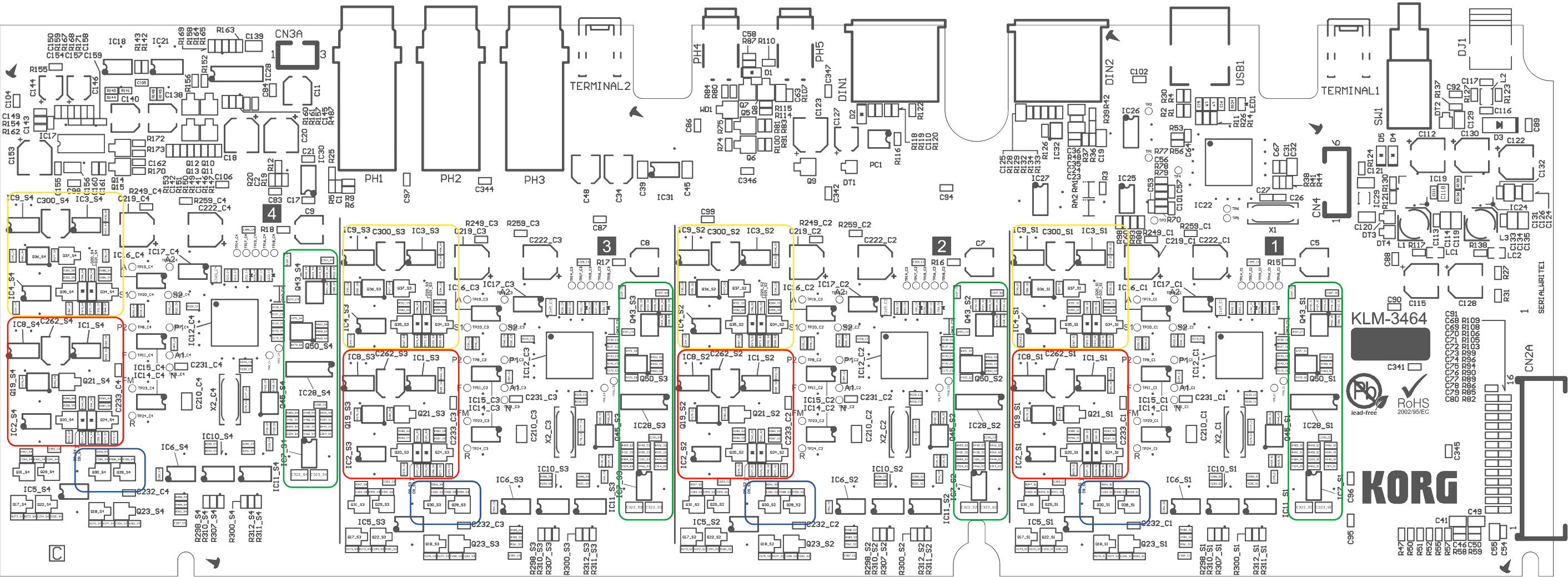
4. Please check the operation of SYNC IN/OUT, MIDI and USB. These are common function just like other synthesizers.
5. You can initialize all setting and preset sounds as factory setting. Please turn on the power while pressing WRITE and EXIT switches. Owner Manual have details description about this function.

How to find fault location of synthesizer circuit in KLM-3464 PCB

Minilogue have test mode for checking all functions. By using test mode, you can get hints where to repair in big minilogue synthesizer circuit. Please use it as a reference.

1. Turning on the power of minilogue while pressing **PLAY** and **REST** and **STEP 4(MONO)** switches. Minilogue will start in service mode.
2. Please press **STEP 1(POLY)** and **EXIT** for skipping the process of all check. And press EXIT twice for selecting "I-05: -TUNE-".
3. Please press STEP 8(SIDE CHAIN) switch while being displayed "I-05: -TUNE-". If there is something wrong in synthesizer circuit, error message will be displayed. Please check attached error code reference for repairing KLM-3464.

minilogue - Tuning Error Code Mount Check Guide



Err : - 2 - - = Cutoff

1 - - -	VOICE 1	VC01 Pt VC01 Sh	TuningError : VCO1 Pitch TuningError : VCO1 SHAPE
- 2 - -	VOICE 2	VC02 Pt VC02 Sh	TuningError : VCO2 Pitch TuningError : VCO2 SHAPE
- - 3 -	VOICE 3	Resonance Cutoff	TuningError : Resonance TuningError : Cutoff
- - - 4	VOICE 4	FM (SQR) FM (TRI) FM (SAW)	TuningError : FM (SQR) TuningError : FM (TRI) TuningError : FM (SAW)

Please check on the bottom side as well.
This is only a guide. There may be other causes for the error.

KORG minilogue Parts List



: SAFETY CRITICAL COMPONENT.

Assem=Assembly view item number

Code	Category	Part Name	Description	Remark	QTY
510320511003	OPAMP	NJM4580M-TE3-#ZZZB (S)	KLM-3464	KLM-3464[TOP]IC31	1
510320511008	OPAMP	NJM4556AM-TE1-#ZZZB (S)	KLM-3464	KLM-3464[TOP]IC30	1
510320511049	OPAMP	NJM13700M-TE1-#ZZZB(S)	KLM-3464	KLM-3464[TOP]IC28	1
510320514030	RESET IC	BU4227G-TR	KLM-3464	KLM-3464[BOT]IC23	1
510320516175	LDO IC	TLV70033DCKR	KLM-3464	[TOP]IC29 [BOT]IC13 C1, IC13 C2, IC13 C3, IC13 C4	5
510320516204	OPAMP	LM3900M	KLM-3464	[TOP]IC28 S1, IC28 S2, IC28 S3, IC28 S4	4
510320519535	OPAMP	TL084CPT	KLM-3464	[TOP]IC1 S1, IC1 S2, IC1 S3, IC1 S4, IC2 S1, IC2 S2, IC2 S3, IC2 S4, IC3 S1, IC3 S2, IC3 S3, IC3 S4, IC4 S1, IC4 S2, IC4 S3, IC4 S4, IC5 S1, IC5 S2, IC5 S3, IC5 S4, IC6 S1, IC6 S2, IC6 S3, IC6 S4, IC7 S1, IC7 S2, IC7 S3, IC7 S4, IC14 C1, IC14 C2, IC14 C3, IC14 C4, IC15 C1, IC15 C2, IC15 C3, IC15 C4 IC16 C1 IC16 C2 IC16 C3 IC16 C4 IC18	42
510320536501	AUDIO ASSP	PT2399SN(L)	KLM-3464	[TOP]IC17	1
510330510002	PHOTO COUPLER	TLP2368(TLMDI,E(0	KLM-3464	[TOP]PC1	1
510335522030	CRYSTAL	RSD-04000F202000	KLM-3464	[TOP]X1, X2 C1, X2 C2, X2 C3, X2 C4	5
510374510004	SW	PS-22F03 (NON-LOCKED)	KLM-3464	[TOP]SW1	1
510450520014	PHONE JACK	PJ-603AG-04 (D)	KLM-3464	[TOP]PH1, PH2, PH3	3
510450520506	DIN JACK	DS-05-02(DIN5P W/OUT SW) (D)	KLM-3464	[TOP]DIN1, DIN2	2
510450524506	PHONE JACK	LJE0371-4P	KLM-3464	[TOP]PH4, PH5	2
510450524509	DC JACK	ID-0214	KLM-3464	[TOP]IDJ1	1
510470524789	HARNESS	HNS-4577	KLM-3464	[BOT]CN1A	1
510474527501	USB CONNECTOR	QT-6301-004	KLM-3464	[TOP]USB1	1
510C92933464	CIRCUIT ASS'Y BOARD	KLM-3464 ASSY MINIOLOGUE			
510200515516	VARIATOR	AVR-M1608C120MT6AB	KLM-3465	[TOP]VZ1, VZ2, VZ3, VZ4, VZ5, VZ6, VZ7	7
510312513021	Chip LED	TO-1608BC-MRE	KLM-3465	[TOP]LED1, LED2, LED3, LED4, LED5, LED6, LED7, LED8, LED9, LED10, LED11, LED12, LED13, LED14, LED15, LED16, LED17, LED18, LED19, LED20, LED21, LED22, LED23, LED24, LED25, LED26, LED27, LED28, LED29, LED30, LED31, LED32, LED33, LED34, LED35, LED36 LED37	37
510320516175	LDO IC	TLV70033DCKR	KLM-3465	[TOP]IC5	1
510374520021	TACT SW	SKRGAQD010	KLM-3465	[TOP]SW4, SW15, SW16, SW17, SW18, SW19, SW20, SW21, SW23, SW24, SW25, SW26, SW27, SW28, SW29, SW30	16
510374522018	TOGGLE SW	TS-22E01-AC18-NI	KLM-3465	[TOP]SW7, SW8, SW9	3
510374522024	TOGGLE SW	TS-23E02-AC18-NI	KLM-3465	[TOP]SW1, SW5, SW22	3
510374522028	TOGGLE SW	TS-23E01-AC-18-NI	KLM-3465	[TOP]SW2, SW3, SW6, SW10, SW11, SW12, SW13, SW14	8
510374524034	SLIDE VR	RA45D1F-211-15C1-B5K-0046	KLM-3465	[TOP]VR29	1
510470524790	HARNESS	HNS-4578	KLM-3465	[BOT]CN5A	1
510320516213	LDO IC	TLV70036DDCR	KLM-3465	[TOP]IC3	1
510313504002	OLED	UG-2864HSWEG01	KLM-3465	[BOT]OLED1	1
510360524044	ROTARY VR	F16K-1467A	KLM-3465	[TOP]VR1, VR2, VR3, VR4, VR5, VR6, VR7, VR8, VR9, VR10, VR11, VR12, VR13, VR14, VR15, VR16, VR17, VR18, VR19, VR20, VR21, VR22, VR23, VR24, VR25, VR26 VR27 VR28	28
510360524045	ROTARY ENCODER	F11E-0184A	KLM-3465	[TOP]EC1	1
510C92933464	CIRCUIT ASS'Y BOARD	KLM-3465 ASSY MINIOLOGUE	KLM-3465		1
510470524788	HARNESS	HNS-4576	Other Electric		1
510470524791	HARNESS	HNS-4579	Other Electric		1
510646502364		LMK SYNTH 12KEY ASSYN KOC-H30424-1	Keyboard Parts		2
510646502365		LMK SYNTH 13KEY ASSYN KOC-H30424-2	Keyboard Parts		1
510500507108		LMK RUBBER BUTTON 12 KOC-E30630-2	Keyboard Parts		2
510500507107		LMK RUBBER BUTTON 13 KOC-E30630-1	Keyboard Parts		1
510500506653		LMK-37 KB FELT KOC-F41792	Keyboard Parts		1
510500506655		LMK-37 UPPER LIMIT FELT (S) KOC-F41793-2	Keyboard Parts		1
510D90583176	CIRCUIT ASS'Y BOARD	KEYBOARD UNIT LMK-37 KLM-3176	Keyboard Parts		1
510540502501	AC PLUG	@060-161WP00-004(PSE/UL PLUG)	ACC	100JP, 120EX	1
510405540029	AC ADAPTER	KA350(EUP II:@3A-163WP09-025)	ACC	100JP, 230GE, 230UK, 240AU	1
510646800170		X-13290 lower case E10286	Mechanical		1
510645800135		X-13290 Back board D30408	Mechanical		1
510646800171		X-13290 Bend Bracket E30756	Mechanical		1
510640805027		X-13290 Bend Spring C41846	Mechanical		1
510646800172		X-13290 Button unit E20342	Mechanical		1
510646800173		X-13290 Button single E30728	Mechanical		1
510646800174		X-13290 Mold Chassis E20432	Mechanical		1
510646800175		X-13290 Window E30768	Mechanical		1
510646800176		X-13290 Led reflector E40933	Mechanical		3
510640800506		X-13290 Upper Panel C10291	Mechanical		1
510646800177		X-13290 Bend knob E30749	Mechanical		1
510646800178		X-13290 Filter knob E30732	Mechanical		1
510646800179		X-13290 Tempo knob E30731	Mechanical		1
510646800180		X-13290 Vol knob E30730	Mechanical		28
510646502163		X-6140 PSW KNOB KOC-E40774	Mechanical		1
510802500558		FRAME LEGS F41516	Mechanical		5